WOOD SHAPER

Model 29

Instruction Manual & Parts List

M-0460218

POWERMATIC®

(800) 274-6848
www.powermatic.com

This manual has been prepared for the owner and operators of a Powermatic Model 29 Shaper. Its purpose, aside from machine operation, is to promote safety through the use of accepted correct operating and maintenance procedures. Completely read the safety and maintenance instructions before operating or servicing the machine. To obtain maximum life and efficiency from your shaper and to aid in using the machine safely, read this manual thoroughly and follow all instructions carefully.

Warranty & Service

The JET Group warrants every product it sells. If one of our tools needs service or repair, one of our Authorized Repair Stations located throughout the United States can give you quick service.

In most cases, any one of these JET Group Repair Stations can authorize warranty repair, assist you in obtaining parts, or perform routine maintenance and major repair on your JET, Performax or Powermatic tools.

For the name of an Authorized Repair Station in your area, please call 1-800-274-6848.

More Information

Remember, the JET Group is consistently adding new products to the line. For complete, up-to-date product information, check with your local JET Group distributor.

JET Group Warranty

The JET Group (including Performax and Powermatic brands) makes every effort to assure that its products meet high quality and durability standards and warrants to the original retail consumer/purchaser of our products that each product be free from defects in materials and workmanship as follow: 1 YEAR LIMITED WARRANTY ON ALL PRODUCTS UNLESS SPECIFIED OTHERWISE. This Warranty does not apply to defects due directly or indirectly to misuse, abuse, negligence or accidents, normal wear-and-tear, repair or alterations outside our facilities, or to a lack of maintenance.

THE JET GROUP LIMITS ALL IMPLIED WARRANTIES TO THE PERIOD SPECIFIED ABOVE, FROM THE DATE THE PRODUCT WAS PURCHASED AT RETAIL. EXCEPT AS STATED HEREIN, ANY IMPLIED WARRANTIES OR MERCHANTIBILITY AND FITNESS ARE EXCLUDED. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG THE IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU. THE JET GROUP SHALL IN NO EVENT BE LIABLE FOR DEATH, INJURIES TO PERSONS OR PROPERTY, OR FOR INCIDENTAL, CONTINGENT, SPECIAL, OR CONSEQUENTIAL DAMAGES ARISING FROM THE USE OF OUR PRODUCTS. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.

To take advantage of this warranty, the product or part must be returned for examination, postage prepaid, to an Authorized Repair Station designated by our office. Proof of purchase date and an explanation of the complaint must accompany the merchandise. If our inspection discloses a defect, we will either repair or replace the product, or refund the purchase price if we cannot readily and quickly provide a repair or replacement, if you are willing to accept a refund. We will return repaired product or replacement at JET's expense, but if it is determined there is no defect, or that the defect resulted from causes not within the scope of JET's warranty, then the user must bear the cost of storing and returning the product. This warranty gives you specific legal rights; you may also have other rights which vary from state to state.

The JET Group sells through distributors only. Members of the JET Group reserve the right to effect at any time, without prior notice, those alterations to parts, fittings, and accessory equipment which they may deem necessary for any reason whatsoever.

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SPECIFICATIONS

Spindle:
- Diameter (standard) ..... 1" x 4"; 3/4" x 3-1/2"; 1-1/4" x 4-3/4"
- Speeds ..... 3000; 4000; 6000; 8000; 10,000 RPM
- Rotation ..... Forward or reverse
- Vertical stroke ..... 7-1/8"
- Tilting ..... 45° forward, 5° backward

Motor 5HP, 3PH, 230/460V
Max. diameter of cutter ..... 8-7/8"
Collet chucks (optional) ..... 3/8", 1/2"
Table:
- Size ..... 27-5/8" x 35-1/2"
- Height ..... 35-1/2"

Fence ..... 5-1/8" x 13-3/4" (x 2 pcs.)
Machine size ..... 33-1/2" x 35-1/2" x 46-1/8"
Packing size ..... 43" x 35-1/2" x 41"
Net weight ..... 682 lbs.
Gross weight ..... 814 lbs.

⚠ GENERAL SAFETY RULES

READ THE MANUAL: Always read the owner's manual carefully before attempting to use the machine. Know the limitations and hazards associated with its use.

INSTALLATION: If mounting machine to the floor, use high quality anchor bolts through the mounting holes on the base. If using a mobile base, be sure to lock the wheels.

PROTECTION: Take every precaution to protect yourself, others around you, and the machine itself, from improper use.

GUARDS: Be sure machine guards are in place and in good working order. Use them at all times on operations where they can be used. If a guard must be removed for any operation, make sure it is replaced immediately following completion of that operation.

HOUSEKEEPING: Before turning on machine, remove all extra equipment such as keys, wrenches, scrap, stock, and cleaning rags from the machine. Keep the area around machine clean and free of scrap material and sawdust to mimimize the danger of slipping.

ELECTRICAL GROUNDING: Your machine must be electrically grounded. If a cord and plug are used, make certain the grounding lug connects to a suitable ground. Follow the grounding procedure indicated by the National Electric Code. Keep power tools in dry areas free from moisture.

TOOL MAINTENANCE: Clean and sharp tools give better and safer performance. Dull tools can cause kickback and excessive chatter. Before making a cut, always check the condition and adjustment of the tools. Never use a tool that is not balanced and rated for the selected RPM.

POWER OFF: Make sure the machine is either unplugged or electrically disconnected and locked out when performing maintenance, chaning cutters, or service work.

CHECK DAMAGED PARTS: Check for alignment of moving parts, binding of moving parts, breakage of parts, mounting, and any other condition that may affect the machine's operation. A guard or other part that is damaged should be properly repaired or replaced.

DO NOT USE IN DANGEROUS ENVIRONMENT: Do not use power tools in damp or wet locations, or expose them to rain. Keep work area well lighted.

DRESS CODE: Do not wear loose clothing, neckties, jewelry, or gloves that can get caught in moving parts. Confine long hair. Keep sleeves above the elbow.

EYES: Always wear approved safety goggles, glasses, or a face shield when operating this machine. There are no exceptions to this rule. Every day eyeglasses only have impact resistant lenses, they ARE NOT safety glasses.

DO NOT OVERREACH: Maintain a balanced stance and keep your body under control at all times. Do not overreach or use excessive force to perform any operation.

IF YOU ARE NOT thoroughly familiar with the operation of shapers, obtain advice from your supervisor, instructor or other qualified person.

DRUGS, ALCOHOL, MEDICATION: Do not operate tool while under the influence of drugs, alcohol, or any medication.

Health Hazards. Some dust created by power sanding, sawing, grinding, drilling and other construction activities contains chemicals known to cause cancer, birth defects or other reproductive harm. Some examples of these chemicals are:

* Lead from lead-based paint.
* Crystalline silica from bricks and cement and other masonry products.
* Arsenic and chromium from chemically-treated lumber.

Your risk from these exposures varies, depending on how often you do this type of work. To reduce your exposure to these chemicals, work in a well-ventilated area, and work with approved safety equipment, such as those dust masks that are specifically designed to filter out microscopic particles.

⚠ SPECIFIC SAFETY RULES

SHORT STOCK: Never shape stock less than 12 inches in length without special fixtures Where practical, shape longer stock and cut to size.

12 INCH RULE: When shaping, never allow your hands to come closer than 12 inches to the cutters.

HAND SAFETY: Never pass the hands directly over or in front of the cutters. As one hand approaches the 12 inch radius point, remove it (or the push stick) in an arc motion and reposition hands 12 inches beyond the cutters, Figure 1.

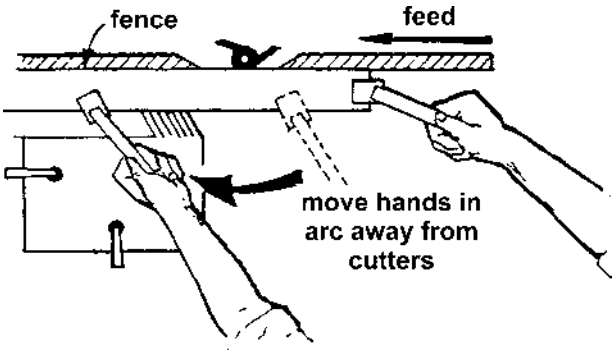


FIGURE 1

FEED STOCK opposite to the direction of the cutter rotation. Never back stock out of the cutter once the cut has been started. Instead, pull the stock straight back away from cutter and begin the cut again. See Figure 2.

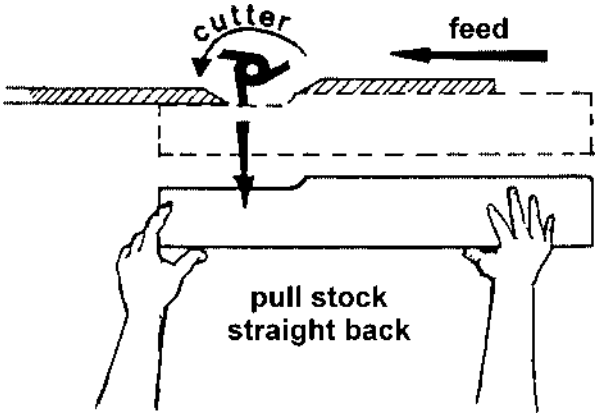


FIGURE 2

COLLARS: When shaping with collars, the collar must have sufficient bearing surface (see page 11). The work must also be fairly heavy in proportion to the cut being made. Do not use short, lightweight stock when shaping against collars.

THE OPENING between the fence plates should be only just enough to clear the cutter.

EDGE SHAPING: Always use the miter gauge and clamp attachment when edge shaping stock less than 6" wide. The fence should be removed during this operation.

SAFETY LOCK WASHER: Never operate the shaper without the safety locking keyed washer located immediately under the spindle nut, Figure 3. This prevents the nut from coming loose when the spindle is run in a counterclockwise direction. Do not substitute any other type washer in place of the safety lock washer.

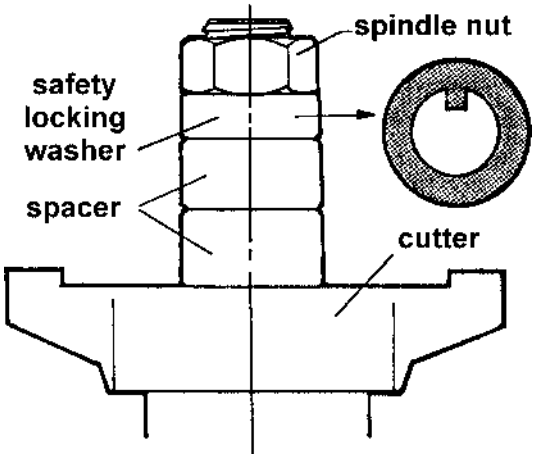


FIGURE 4

BE SURE the special arbor nut and the draw bar are tightened on the arbor.

MISUSE: Do not use this shaper for other than its intended use. If used for other purposes, POWERMATIC disclaims any real or implied warranty and holds itself harmless for any injury which may result from that use.

REPLACEMENT PARTS: Use only POWERMATIC or factory authorized replacement parts and accessories; otherwise, the shaper warranty and guarantee will be null and void.

RECEIVING THE SHAPER

Carefully unpack the shaper and any loose items from the wood crate and inspect for damage. Any damage should be reported to your distributor and shipping agent immediately. Before proceeding further, read your manual thoroughly to familiarize yourself with proper assembly, maintenance and safety procedures.

Contents of crate:
1 shaper base
1 fence body
1 fence cover
3 table inserts
1 miter gauge rod
1 miter gauge/clamp assembly
1 spindle wrench
3 arbor wrenches
1 box containing:
- 1 safety shield
- 2 hold downs
- 2 fence-locking handles with washers
- 2 fence cover knobs
- 3 hold down blocks (with wing nuts)
- 2 aluminum fence plates
- 2 lock blocks with knobs
- 1 miter gauge bar
- 1 draw bar
- 1 cabinet handle

Remove the screws that hold the shaper to the shipping crate. Remove the protective coating from the table and loose items packed with the machine. This coating may be removed with a soft cloth moistened with Kerosene. DO NOT use acetone, gasoline or lacquer thinner for this purpose. DO NOT use solvents on plastic parts.

INSTALLATION

Install shaper on a level surface. Check table surface with a machinist level and, if necessary, use metal shims under low corners. Secure to the floor with good quality anchor bolts through the holes on the inside bottom of the base.

ELECTRICAL WIRING

WARNING: ELECTRICAL WIRING SHOULD BE DONE BY A QUALIFIED ELECTRICIAN. THE MACHINE MUST BE PROPERLY GROUNDED TO PREVENT INJURY FROM POSSIBLE ELECTRIC SHOCK.

The shaper must be connected to a grounded wiring system. See schematic, page 22 and 23.

All wiring should be done in accordance with the National Electrical Code.
Never connect the green grounding wire to a live terminal.
Make sure the voltage listed on your motor plate is the same as that of your power source.

CAUTION: Running the motor on a lower voltage may damage the motor.

ASSEMBLY

Tools required: set of open-end wrenches, phillips screwdriver, spindle wrenches

FENCE ASSEMBLY

1. Mount the fence body (A) to the shaper base (B) with the two locking handles and washers (C). Place the cover (D) atop the fence and secure with two knobs (E). See Figure 4.

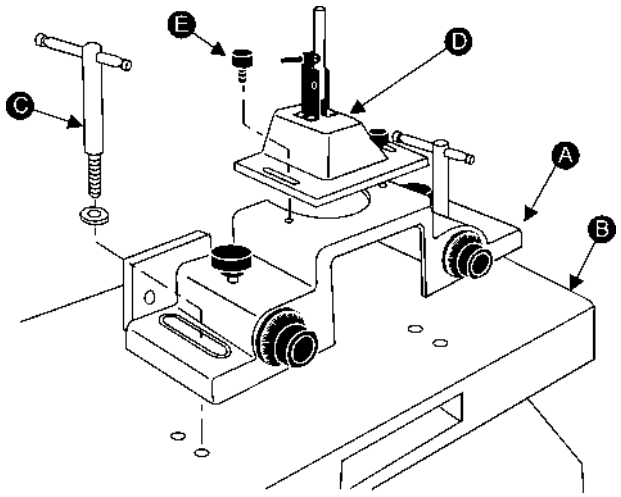


FIGURE 4

2. Attach the lock blocks (F) to the connection plates (G) with the knobs and washers, Figure 5. Slide the aluminum fences (H) onto the lock blocks (F) as shown.
NOTE: The knobs are spring-loaded and can be repositioned without affecting the screw; simply pull up on the handle and reposition it on the nut located beneath the handle.

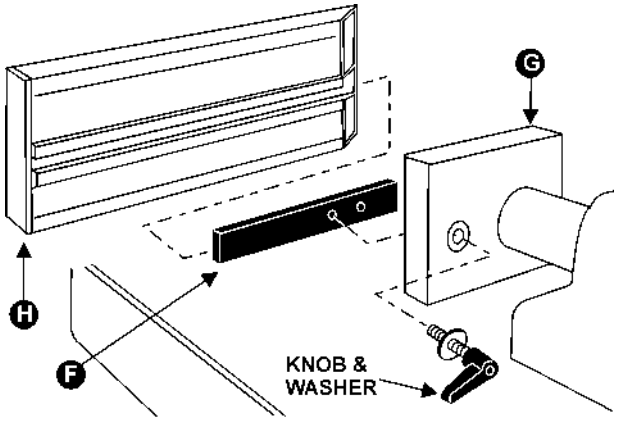


FIGURE 5

3. Mount the dust hood (J) to the rear of the fence body (A) with the four cross screws, Figure 6.

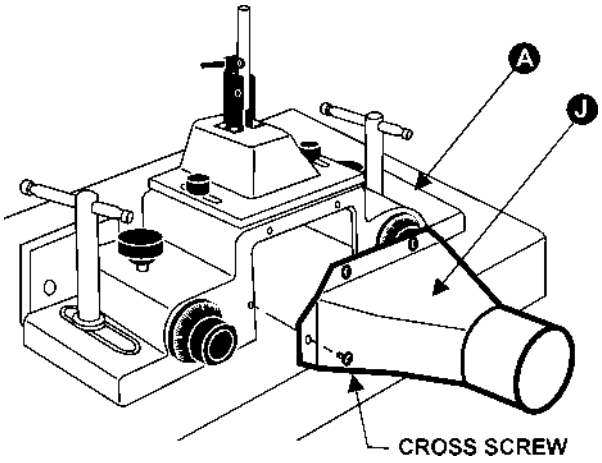


FIGURE 6

MITER GAUGE/CLAMP ASSEMBLY

The miter gauge and clamp are used for shaping the end of stock. To assemble the miter gauge:

1. Assemble miter gauge (A) by placing bottom screw into hole on bar (B) and screwing knob and washer onto threaded rod (C), Figure 7. Tighten knob.
2. Slide miter gauge bar into table slot from the end.
3. Insert rod (D) and work stop (E) into the miter gauge, making sure flat side of rod is facing up. Tighten knobs (F) on miter gauge, Figure 7.

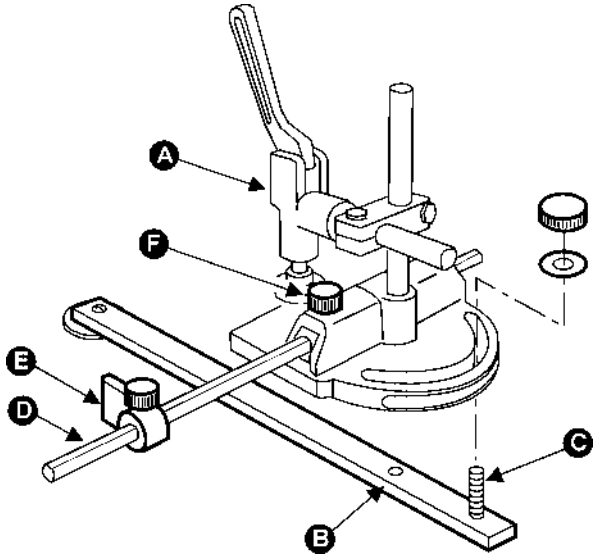


FIGURE 7

ADJUSTMENTS

BELT ADJUSTMENT/SPEED CHANGE

The Model 29 Tilting Shaper is equipped with a motor and shaft pulley, Figure 8, capable of delivering five speeds. Beginning with the top grooves on the pulleys, the speeds are 10,000; 8,000; 6,000; and 4,000 RPM, down to the lowest groove which provides 3,000 RPM. A diagram found on the front of the machine will aid in identifying these positions.

To change the speed and adjust the proper belt tension, proceed as follows:

1. Disconnect machine from power source.
2. Open front guard door.
3. Pull handle (A) to loosen belt.
4. Move belt (B) to the desired groove on the pulleys.
5. Adjust the belt tension, and push handle (A) back in to retighten. Proper tension is reached when the belt can be depressed about 1/8 inch to 1/4 inch between the two pulleys, Figure 9.

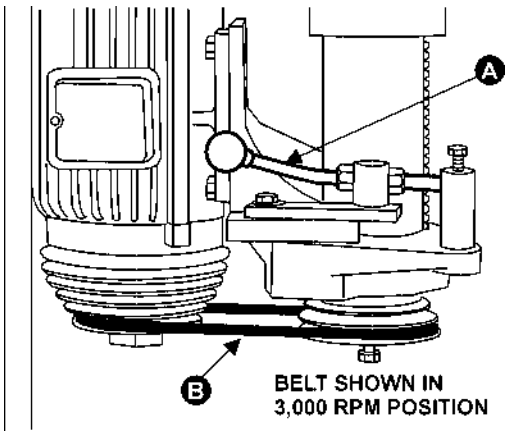


FIGURE 8

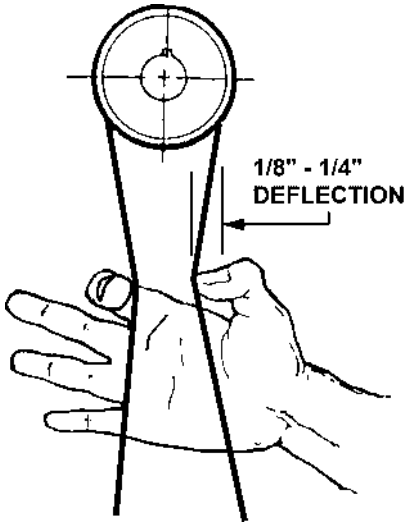


FIGURE 9

SPINDLE INSTALLATION & REPLACEMENT

The Model 29 can use interchangeable spindles as well as router bits. To install the spindle, proceed as follows:

1. Disconnect machine from power source.
2. Lock the main shaft by opening the rear door in the cabinet and pulling out the knob (A), Figure 10, and rotating it to the right until it locks in place.

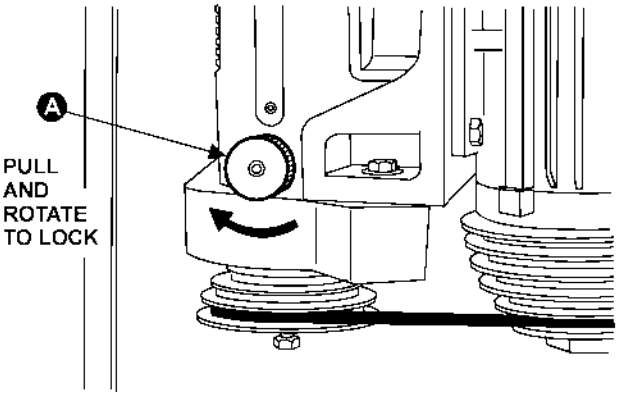


FIGURE 10

3. Make sure the spindle and bore of the main shaft are clean of sawdust and debris.
4. Insert the spindle (B) into the shaft (C), matching their alignment pins, Figure 11. Then tighten up the nut on the draw bar (D) below the pulley to seat the spindle, Figure 12.
5. Lock the lower spindle nut with the provided "hook"-shaped spindle wrench (E), securing it tightly, Figure 11. (NOTE: You will have to tilt the shaft assembly to use the spindle wrench).

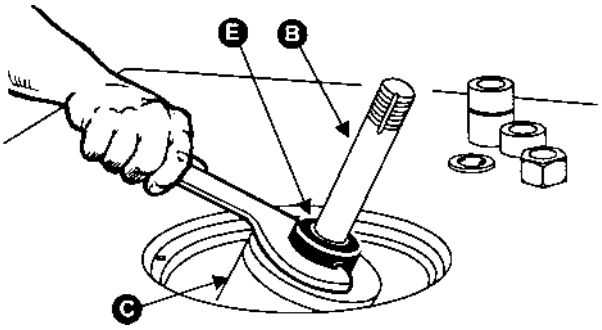


FIGURE 11

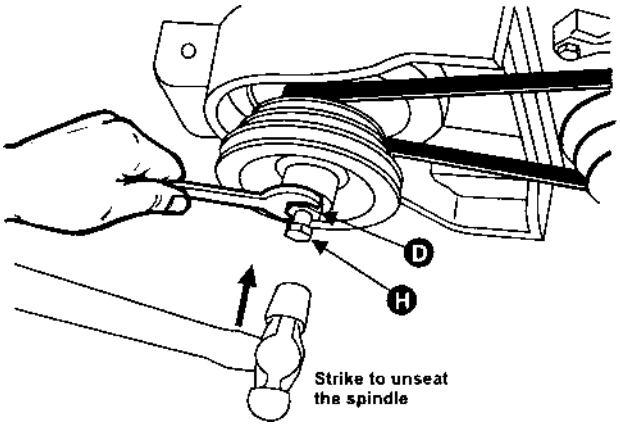


FIGURE 12

6. Unlock the shaft by rotating the lock knob (Figure 10) to the left and allowing it to snap back in.
7. To remove a spindle, loosen the nut (E), Figure 11, then take down the nut on the draw bar (D), Figure 12. Loosen the draw bar by turning 2 or 3 times (H), and use hammer or other hard material to strike the base of the draw bar to unseat the spindle.

WARNING: After installing and checking the spindle, CHECK AGAIN. Make certain the draw bar and nut, and spindle nut, are tightened securely!

TILTING THE SPINDLE

The spindle will tilt from 5 degrees backward to 45 degrees forward. To adjust the tilt:

1. Loosen knob (G) on the tilting handwheel (H), Figure 13.
2. Loosen lock handles (J) on both sides of the machine.
3. Turn handwheel (H) to desired position and tighten knob (G) and handles (J).

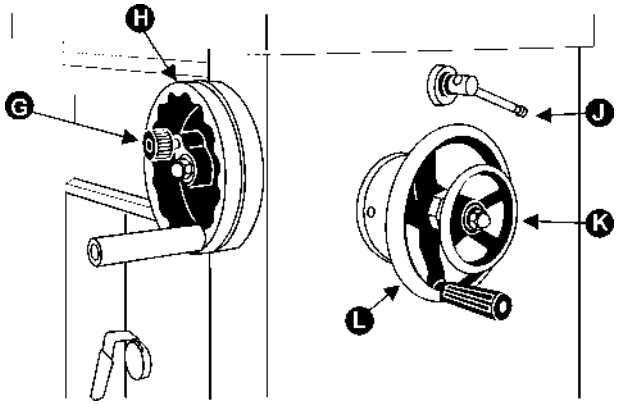


FIGURE 13

RAISING & LOWERING SPINDLE

1. Loosen the small handwheel (K), Figure 13.
2. Turn large handwheel (L) until spindle reaches the desired height.
3. Retighten small handwheel (K).

INSTALLING CUTTERS

1. Disconnect machine from power source.
2. Lock the main shaft (see Figure 10).
3. Set the desired cutterhead (A) on the spindle, Figure 14, making sure of the proper rotation direction (refer to illustration in "Safety Rules").
4. Put the appropriate number of stacking collars (B) onto the spindle to attain the proper height.

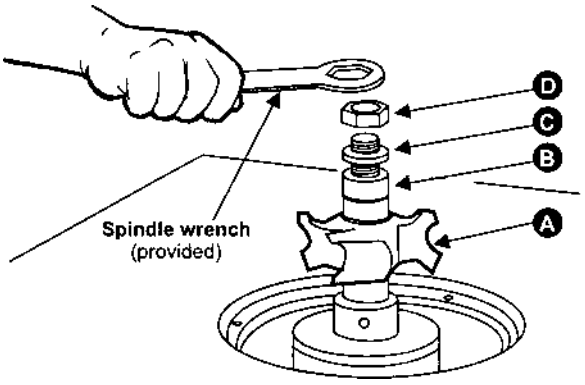


FIGURE 14

5. Place safety washer (C) on top and tighten spindle nut (D) onto the spindle.
6. Unlock the main shaft.
7. To remove a cutter, reverse the above procedure.

CAUTION: Always include the safety washer (C) on the spindle when operating the shaper. This helps prevent the spindle from loosening while running in reverse.

WARNING: AFTER INSTALLING A CUTTER AND CHECKING IT FOR TIGHTNESS, CHECK AGAIN! Make certain the direction of cutter is correct and that the stacking collar, safety washer and spindle nut are all tightened securely!

WARNING: Be sure to release the lock knob from the main shaft before starting machine (Figure 10).

TABLE INSERTS

Three table inserts come standard with your shaper: a 6-3/8" (160mm) diameter, a 2-7/16" (60mm) diameter and an oval opening (for a tilted spindle). See Figure 15. The smaller insert has a guide shoulder of 3-3/16" (80mm) which is used for the purpose of copying.

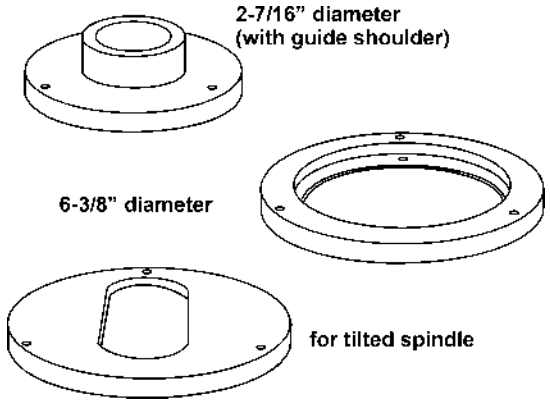


FIGURE 15

FENCE ADJUSTMENT

1. Loosen the handles (A) and move fence body to desired position, Figure 16. Re-tighten the handles.
2. Loosen the knob (B) and turn the fence knob (C) until correct setting is achieved.
3. Retighten knob (B).

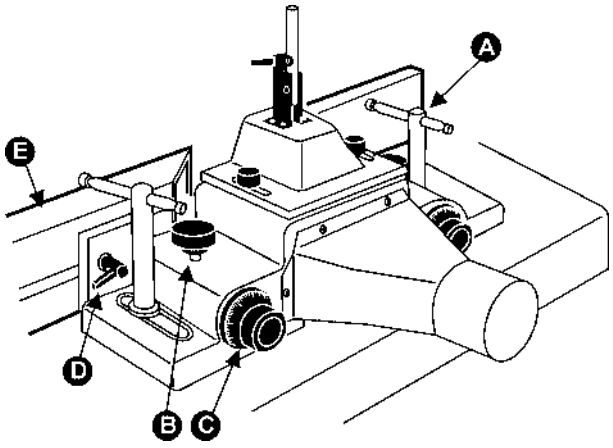


FIGURE 16

Each half of the aluminum fence should be adjusted as close to the cutterhead as possible without interfering with it. Each can be moved independently depending on the type of work to be done:

4. Loosen the knob (D) on the connection plate and slide aluminum fence (E) to position, Figure 16. Retighten knob (D).

WORK HOLD-DOWNS & SAFETY SHIELD

Two hold-downs and one safety shield are included with the shaper. One hold-down (A) presses stock down upon the table, the other (B) keeps it pressed against the fence. These can be mounted to the hold-down base (C), Figure 17, by the use of wing-nut blocks (D). The safety shield (E) can be mounted to either of the hold-down pieces as shown.

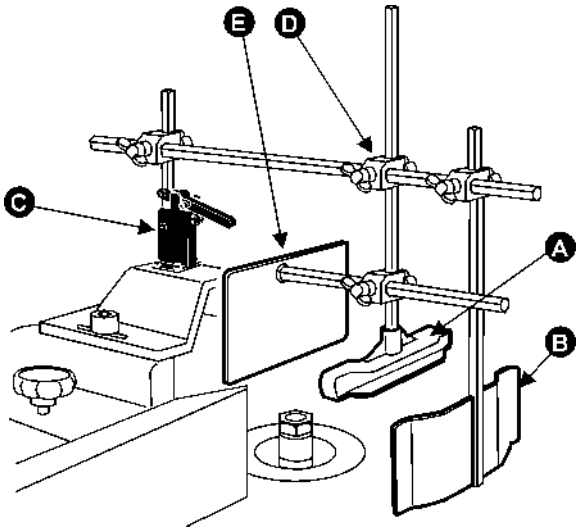


FIGURE 17

The hold-down base is factory adjusted to maintain vertical positioning of the rod. However, if adjustment is ever necessary, raise the handle (F) and loosen nut (G) with a wrench. Then turn the socket head screw (H) with an allen wrench, in or out until the rod is vertical. See Figure 18. When satisfied, re-tighten the nut (G). Loosen the soc. hd. screws (J) on the handle and adjust the eccentric washers behind them so that the handle can be lowered all the way but still maintain a degree of tightness. Re-tighten screws.

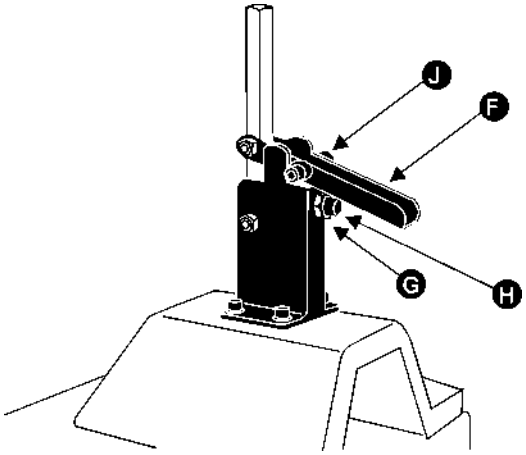


FIGURE 18

When changing cutters, simply lift handle on hold-down base (F), Figure 18, and flip entire assembly back out of the way.

OPERATION

Always release the main spindle from the lock knob before starting machine (see Figure 10).

Your shaper is equipped with pushbutton magnetic controls. A start button, power indicator, reversing switch, and emergency stop are all located on the front of the machine.

To reverse the rotation of the spindle, simply shut off the motor and engage the reversing switch.

CAUTION: NEVER attempt to reverse the rotation of the spindle while the motor is running.

SHAPING WITH THE FENCE

Using the fence is the safest and most satisfactory method of shaping, and should always be used when the work permits. Almost all straight work can be used with the fence.

1. For normal work, where a portion of the original edge of the stock is not touched by the cutter, both the infeed and outfeed fence are in a straight line, Figure 19.

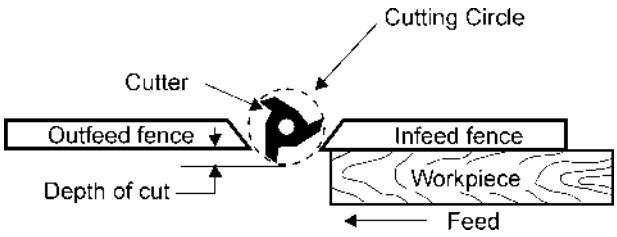


FIGURE 19

2. When the shaping operation removes the entire edge of the stock, e.g. in jointing or making a full bead, the shaped edge will not be supported by the outfeed fence when both fences are in line, Figure 20a. In this case, the stock should be advanced to the position shown in Figure 20a and stopped. The outfeed fence should then be moved forward to contact the work, Figure 20b. The outfeed fence will then be in line with the cutting circle and the operation can continue.

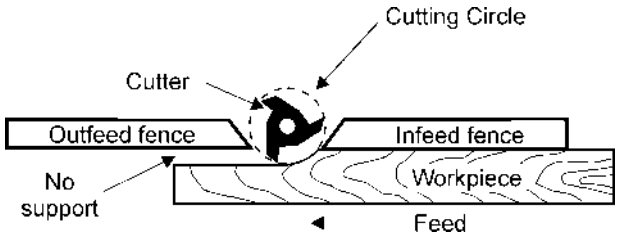


FIGURE 20a

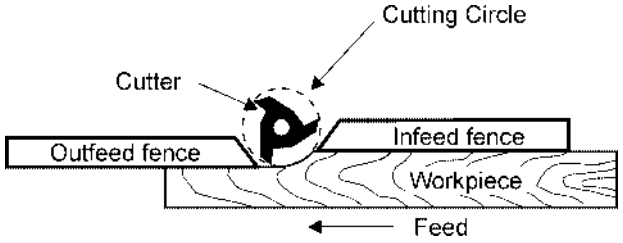
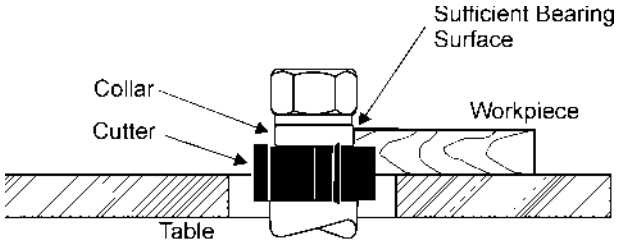


FIGURE 20b

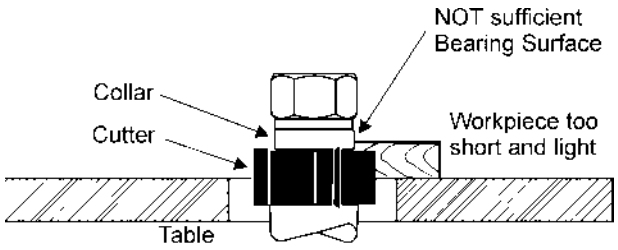
POSITION OF COLLARS

When shaping with collars, the collar must have sufficient bearing surface, as shown in Figure 21a. Also the work must be fairly heavy relative to the cut being made. Under no circumstances should a short, light workpiece be shaped against the collars, as in Figure 21b.



RIGHT

FIGURE 21a



WRONG

FIGURE 21b

The collars may be used in any of the following positions: above, below, or between the cutters.

1. When the collar is used below the cutter, as in Figure 22, the progress of the cut can be seen throughout the operation. However, any accidental lifting of the work will gouge the wood and ruin the workpiece.

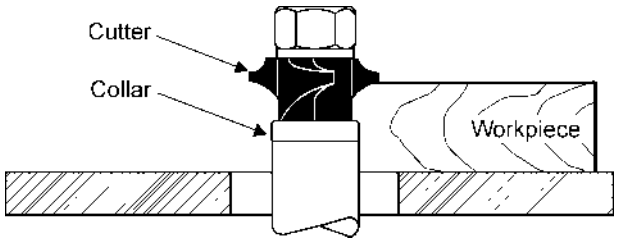


FIGURE 22

2. When the collar is used above the cutter, as in Figure 23, the cut can not be seen; but this method offers an advantage in that the cut is not affected by slight variations in the thickness of the stock.
Also, accidental lifting of the workpiece will not gouge the workpiece; simply repeat the operation to correct the mistake.

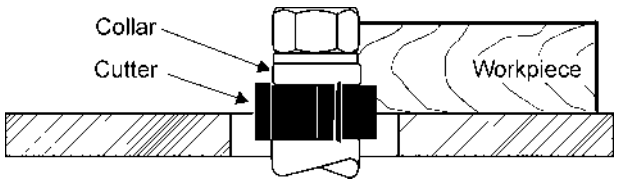


FIGURE 23

3. Using the collar between two cutters has the advantages and disadvantages of the first two procedures, and is frequently used where both edges of the work are to be molded; see Figure 24.

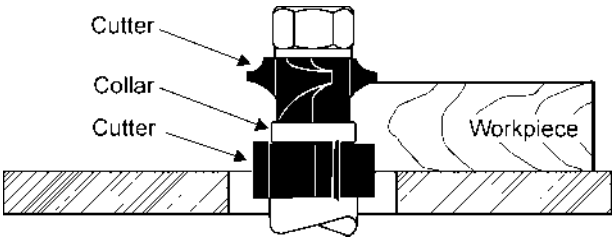


FIGURE 24

NOTE: It is advisable to place the cutter as low as possible on the spindle to reduce spindle deflection and ensure the best possible finish. Also make sure that the contacting surfaces of the cutter are smooth, clean and without dents.

MITER GAUGE

The miter gauge is used for shaping the end of stock, usually requiring removal of the fence. To edge-shape, place the stock against the gauge as shown, Figure 25. Tighten clamp (A) firmly against stock and adjust work stop (B) against rear edge of stock. Push work past cutterhead.

The miter gauge can be adjusted to shape at an angle by loosening the knob (C) and rotating the gauge body to the desired angle on the indicator (D).

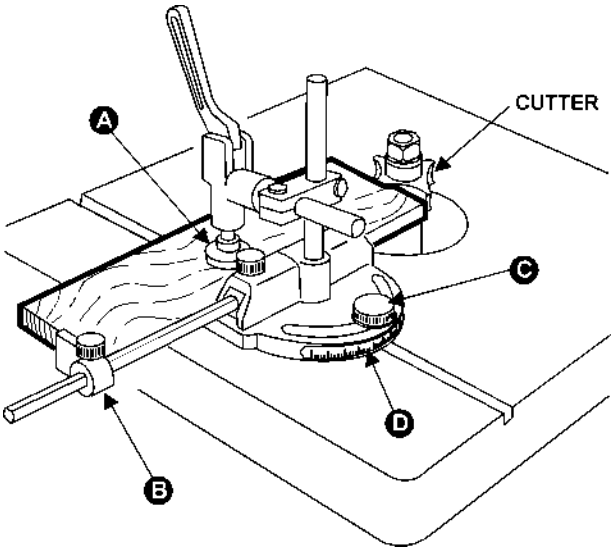


FIGURE 25

The Shaper can be used for molds, rabbets, grooves, tenons, copying, etc.:

TENONING

The provided miter gauge and clamp can be used for tenoning operations.

CAUTION: When using tenoning cutters with a diameter of 11-13/16" or 9-13/16", run spindle at a speed not higher than 3,000 RPM. If tenoning cutters have a diameter of 7-7/8" or 6- 3/8", run spindle at a speed not higher than 6,000 RPM. If tenoning cutters have a diameter no larger than 3-3/16", run spindle at 10,000 RPM.

COPYING

When using the same procedure on multiple workpieces, a jig or template can be made to facilitate the operation:

1. Prepare the jig (A), Figure 26, to accomodate your original workpiece.
2. Place the jig (A) against the table insert guide shoulder (B).
3. Fasten the new workpiece (C) on the jig (A) with the clamp (D) and push the assembly past the cutter.

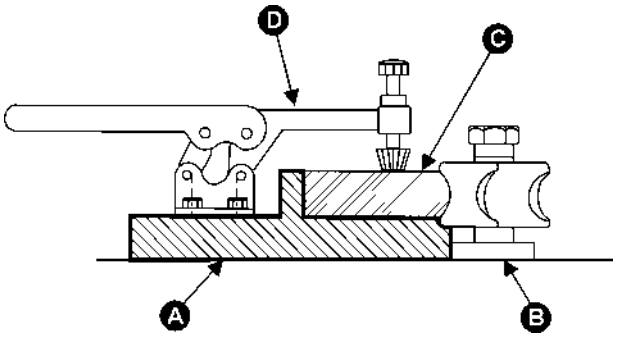


FIGURE 26

MAINTENANCE

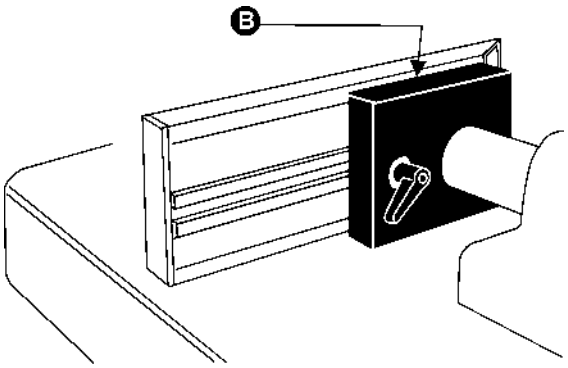
Item	Position	Interval	Suitable types of oil	Fig. No.
A	Table Opening	Frequently	Machine Oil	28
B	Connection Plate	Frequently	Machine Oil	29
C	Main Shaft	Monthly	Shell Alvania Grease R2	28

FIGURE 27

Apply a drop of light machine oil occasionally on the ledge and wall of the table opening to facilitate the changing of table inserts.

The bearings in the motor are sealed for life and do not require lubrication.

The main shaft should be lubricated with grease regularly after continuous running for 30 days. See chart.



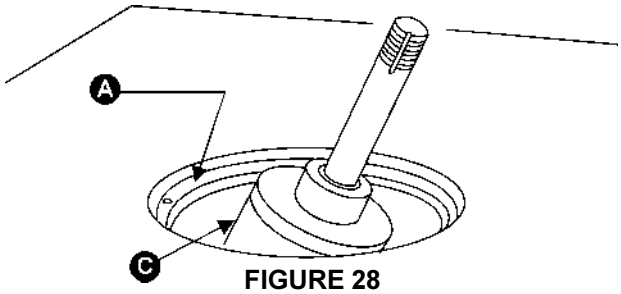


FIGURE 28

Trouble-Shooting for Model 29 Shaper

PROBLEM	POSSIBLE CAUSE	SOLUTION
Shaper will not start.	1. Fuse blown or circuit breaker tripped. 2. Cord damaged.	1. Replace fuse or reset circuit breaker. 2. Have cord replaced by authorized service person.
Overload kicks out frequently.	1. Extension cord too light or too long. 2. Stock being fed too quickly. 3. Cutter is dull or has gum on it.	1. Replace with adequate size cord. 2. Feed stock more slowly. 3. Clean or replace cutter.
Cutterhead does not come up to speed.	1. Extension cord too light or too long. 2. Low current. 3. Motor not wired for correct voltage. 4. Spindle is locked.	1. Replace with adequate size cord. 2. Contact local electric company. 3. Refer to motor name plate for correct wiring. 4. Release spindle lock knob.
Shaper makes unsatisfactory cuts.	1. Dull cutter. 2. Gum or pitch on cutter. 3. Gum or pitch on table causing erratic feed. 4. Feeding work in wrong direction.	1. Replace cutter. 2. Remove cutter and clean with turpentine and steel wool. 3. Clean table with turpentine and steel wool. 4. Feed work against cutter rotation.
Stock burns.	1. Dull cutter. 2. Cutting too deep. 3. Forcing work.	1. Sharpen by honing on flat side. 2. On hardwoods take light cuts; attain full depth of cut with several passes. 3. Feed slowly and steadily.
Machine vibrates excessively.	1. Damaged cutterhead. 2. Stand or bench on uneven floor. 3. Bad v-belt. 4. V-belt not tensioned correctly. 5. Bent pulley. 6. Improper motor mounting.	1. Replace cutterhead. 2. Reposition on flat, level surface. 3. Replace belt. 4. Adjust belt tension by moving motor bracket. 5. Replace pulley. 6. Check and adjust motor mounting.
Edge splits off on	1. Characteristic of cut.	1. Make cross-grain cuts first then finish with grain. Use scrap block to support at end of cut.
Raised areas on shaped edge.	1. Variation in pressure which holds work against cutter.	1. Keep work firmly against fence or collars throughout pass. Use hold-downs.
Work pulled from hand of cut.	1. No support.	1. Use mitre gauge with hold-down to start cut when shaping freehand; hold work firmly against fence. Adjust the tension of spring plate.
Depth of cut not uniform.	1. Misalignment. 2. Side pressure not uniform.	1. Adjust outfeed fence. 2. Use hold-downs; keep pressure against fence or collars consistent.
Variation in height of cut.	1. Variation in pressure which holds work	1. Keep pressure firm throughout pass. Use hold-downs. Make pass slowly and steadily. Whenever possible, keep cutter under stock.

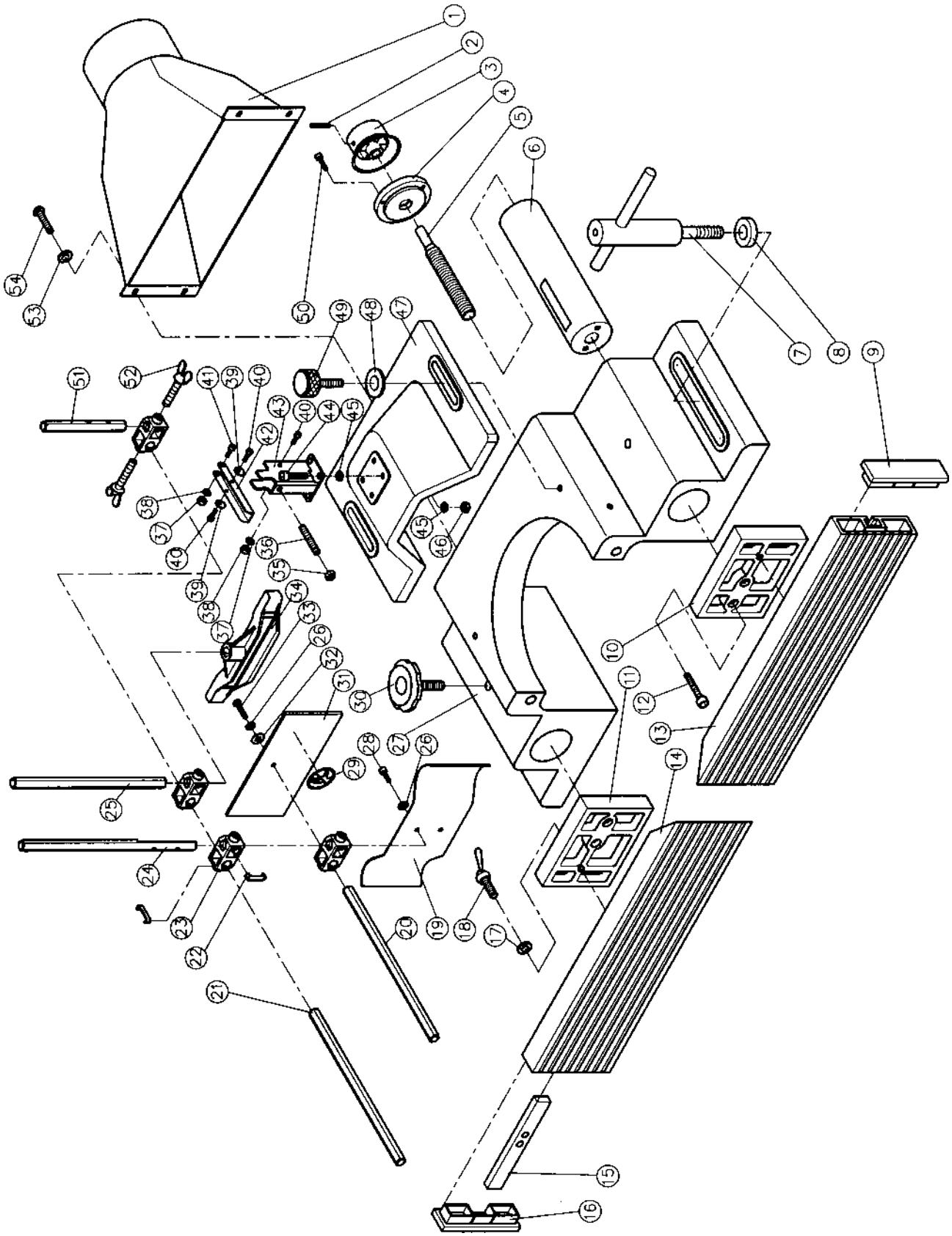
Trouble-Shooting for Model 29 Shaper (continued)

PROBLEM	POSSIBLE CAUSE	SOLUTION
Cuts not smooth.	1. Wrong R.P.M. 2. Feed too fast. 3. Working against grain. 4. Cutting too deep.	1. Use faster speed. 2. Pass stock more slowly. 3. Work with grain whenever possible. 4. On very deep cuts make several passes.
Spindle does not raise freely.	1. Sawdust and dirt in raising mechanisms.	1. Brush or blow out loose dust and dirt.

PARTS LIST: **Fence Assembly** (29 Shaper) (6293192 - Items 1 thru 18 & 35 thru 54)

NO.	PART NO.	DESCRIPTION
1	6292984	CHUTE, DUST
2	6292985	SCREW, HEX. SOC. SET M8 X 20
3	6292986	KNOB, ADJUSTMENT
4	6292987	PLATE
5	6292988	SCREW, ADJ.
6	6292989	RAM
7	6292990	HANDLE, LOCK
8	6292991	WASHER
9	6292992	CAP, R.H.
10	6292993	BLOCK, R.H.
11	6292994	BLOCK, L.H.
12	6292995	SCREW, HEX. SOC. HD. M6 X 30
13	6292996	FENCE, R.H.
14	6292997	FENCE, L.H.
15	6292998	GUIDE
16	6292999	CAP, L.H.
17	6293000	WASHER, FLAT M8
18	6293001	LEVER, LOCK
19	6293002	GUIDE
20	6293003	BAR, HORIZONTAL
21	6293004	BAR, HORIZONTAL
22	6293005	CLIP
23	6293006	BLOCK
24	6293007	BAR, VERTICAL
25	6293008	BAR, VERTICAL
26	6293009	WASHER, SPRING M6
27	6293010	BODY, FENCE
28	6293011	SCREW, HEX. SOC. HD. M6 X 10
29	6293012	LABEL, WARNING
30	6293013	KNOB, LOCK
31	6293014	SHIELD
32	6293009	WASHER, SPRING M6
33	6293015	SCREW, CHEESE HD. M6 X 20
34	6293016	GUIDE
35	6293017	NUT, HEX. M8
36	6293018	SCREW, HEX. SOC. SET M8 X 35
37	6293019	WASHER, SPRING M5
38	6293020	NUT, LOCK M5
39	6293021	WASHER, CAM
40	6293022	SCREW, HEX. SOC. HD. M5 X 10
42	6293023	LATCH
43	6293024	BRACKET
44	6293025	SCREW, HEX. SOC. HD. M8 X 30
45	6293026	WASHER, SPRING M8
46	6293017	NUT, HEX. M8
47	6293027	PLATE
48	6293000	WASHER, FLAT M8
49	6293028	KNOB, M8 w/ STUD
50	6293029	SCREW, HEX. SOC. HD. M5 X 12
51	6293030	BAR, VERTICAL
52	6293031	KNOB, w/ STUD
53	6293000	WASHER, FLAT M8
54	6293032	SCREW, CHEESE HD., M8 X 12
	6293194	WORK HOLD-DOWN GUIDES (Items 19 thru 34)

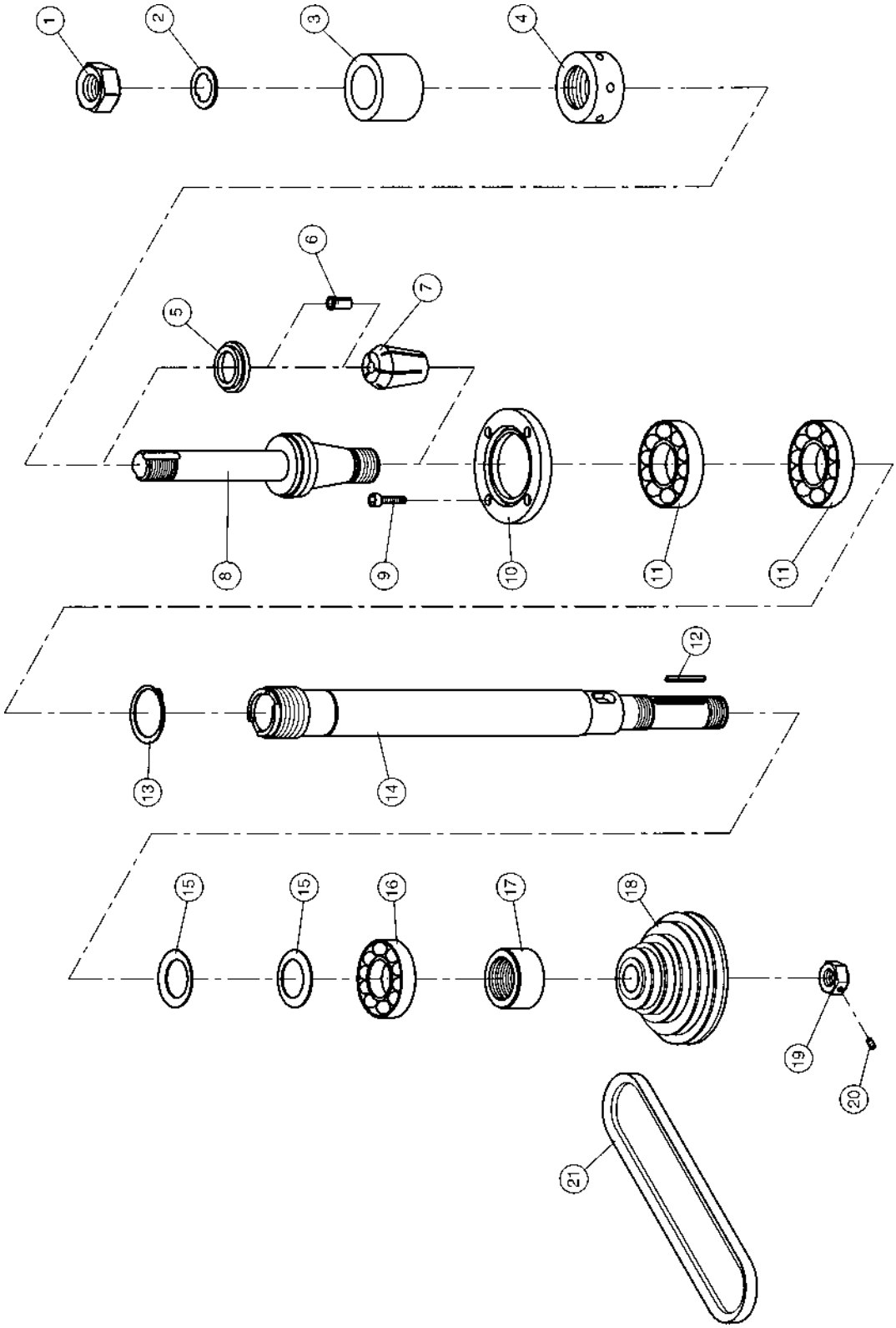
Fence Assembly (29 Shaper)



PARTS LIST: **Spindle Assembly** (29 Shaper)

NO.	PART NO.	DESCRIPTION
1	6293033	NUT, 3/4" SPINDLE
	6293034	NUT, 1" SPINDLE
	6293035	NUT, 1-1/4" SPINDLE
2	6293036	WASHER, KEYED
3	6293037	SET, SPACER 3/4"
	6293038	SET, SPACER 1"
	6293039	SET, SPACER 1-1/4"
4	6293040	NUT, RETAINER
5	6293041	NUT, COLLET
6	6293042	BUSHING, 1/4"
7	6293043	CHUCK, 1/2" COLLET
8	6293044	SPINDLE, INTERCHANGEABLE 3/4"
	6293045	SPINDLE, INTERCHANGEABLE 1"
	6293046	SPINDLE, INTERCHANGEABLE 1-1/4"
9	6293047	SCREW, HEX. SOC. HD. M5 X 16
10	6293048	PLATE
11	6293049	BEARING
12	6293050	KEY, 6 X 54
13	6293051	RING, RETAINING
14	6293052	SPINDLE
15	6293053	SPRING, DISK, 61.5 X 40.5 X 0.7
16	6293054	BEARING
17	6293055	SPACER
18	6293056	PULLEY, SPINDLE
19	6293057	NUT
20	6293058	SCREW, HEX. SOC. SET, M6 X 6
21	6293059	BELT
	6293195	3/4" INTERCHANGEABLE SPINDLE ASSY. (Items 1, 2, 3, 8)
	6293196	1" INTERCHANGEABLE SPINDLE ASSY. (Items 1, 2, 3, 8)
	6293197	1-1/4" INTERCHANGEABLE SPINDLE ASSY. (Items 1, 2, 3, 8)

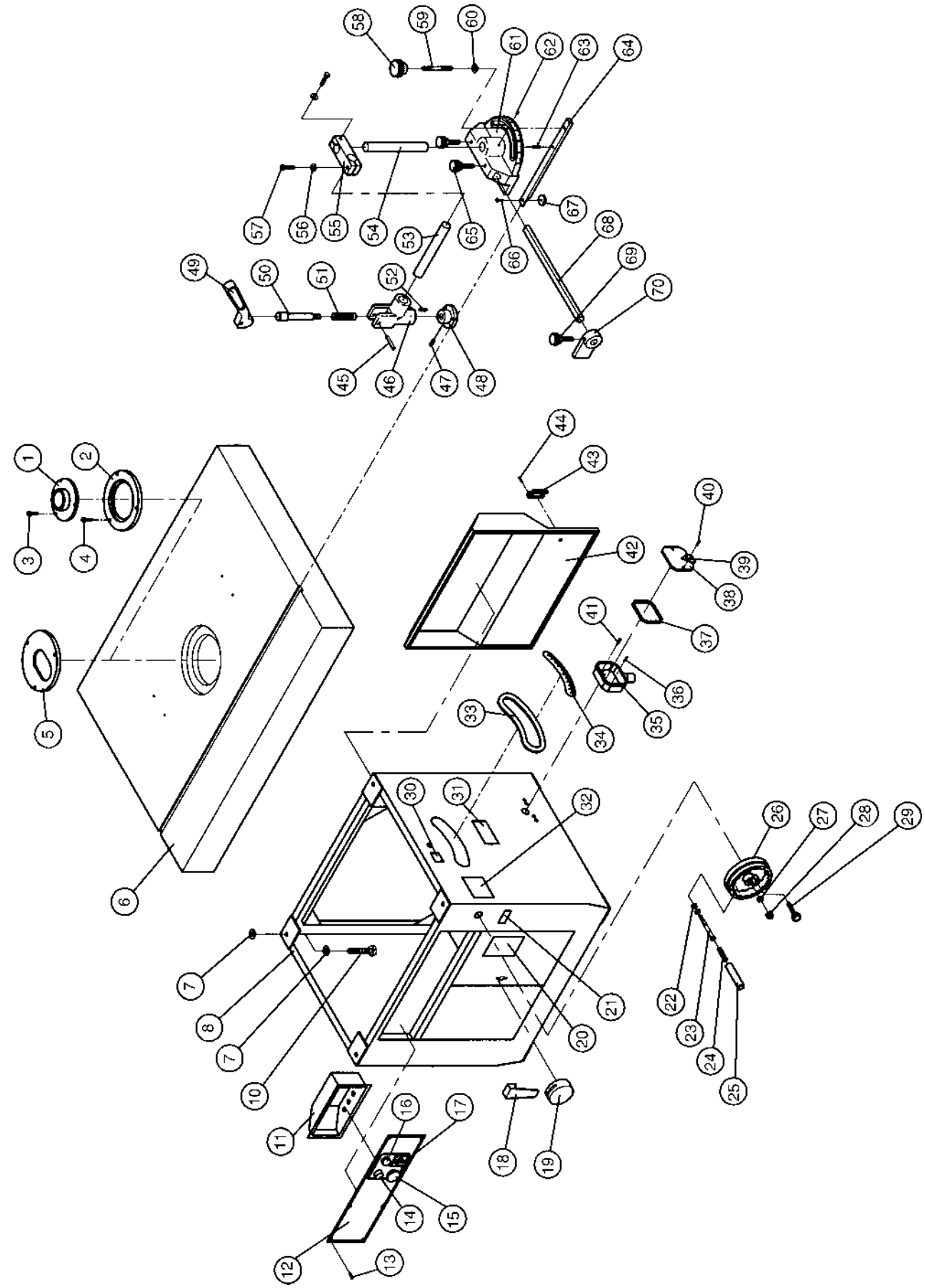
Spindle Assembly (29 Shaper)



PARTS LIST: **Shaper Body & Mitre Gauge Assemblies** (29 Shaper)

NO.	PART NO.	DESCRIPTION
1	6293060	RING, INSERT
2	6293061	RING, INSERT
3	6293029	SCREW, HEX. SOC. HD. M5 X 12
4	6293062	SCREW, HEX. SOC. HD. M5 X 16
5	6293063	RING, INSERT
6	6293064	TABLE
7	6293065	WASHER, M12
8	6293066	CABINET
10	6293067	SCREW, HEX. SOC. M12 X 45
11	6293068	COVER, SWITCH
12	6293069	PANEL
13	6293070	SCREW, CHEESE HD., M4 X 10
14	6293071	BUTTON, START
15	6293072	BUTTON, STOP
16	6293073	LAMP, PILOT
17	6293074	SWITCH, FWD.-REV.
18	6293075	HANDLE
19	6293076	LATCH
20	6293077	LABEL
21	6293078	LABEL
22	6293079	NUT, HEX. M10
23	6293080	SCREW, FIXED
24	6293081	SPRING
25	6293082	KNOB
26	6293083	HANDWHEEL
27	6293065	WASHER, M12
28	6293084	NUT, CUP M12
29	6293085	KNOB, M8
30	6293086	LABEL
31	6293087	LABEL
32	6293088	LABEL
33	6293089	BASE, INDICATOR SCALE
34	6293090	LABEL
35	6293091	BASE, TERMINAL
36	6293070	SCREW, CHEESE HD. M4 X 10
37	6293092	SEAL
38	6293093	COVER
39	6293094	LABEL
40	6293095	SCREW, CHEESE HD. M6 X 16
41	6293096	SCREW, CHEESE HD. M5 X 12
42	6293097	COVER
43	6293098	LATCH
44	6293099	SCREW, HEX. SOC. FLAT HD. M5 X 12
45	6293100	PIN
46	6293101	BRACKET
47	6293102	SCREW, HEX. SOC. SET M6 X 12
48	6293103	PAD
49	6293104	LEVER
50	6293105	PLUNGER
51	6293106	SPRING
52	6293107	SCREW, HEX. SOC. SET M8 X 12
53	6293108	ROD, HORIZONTAL
54	6293109	ROD, VERTICAL
55	6293110	BLOCK
56	6293111	WASHER, LOCK M10
57	6293112	SCREW, HEX. SOC. M10 X 35
58	6293113	KNOB
59	6293114	STUD
60	6293115	WASHER, M10
61	6293116	BODY
62	6293107	SCREW, HEX. SOC. SET M8 X 12
63	6293117	STUD, PIVOT
64	6293118	BAR, GUIDE
65	6293119	KNOB w/ STUD
66	6293120	SCREW, HEX. SOC. FLAT HD. M4 X 10
67	6293121	NUT, RETAINER
68	6293122	ROD
69	6293119	KNOB w/ STUD
70	6293123	BLOCK, STOP
	6293193	MITRE GAUGE ASSY. (Items 45 thru 70)

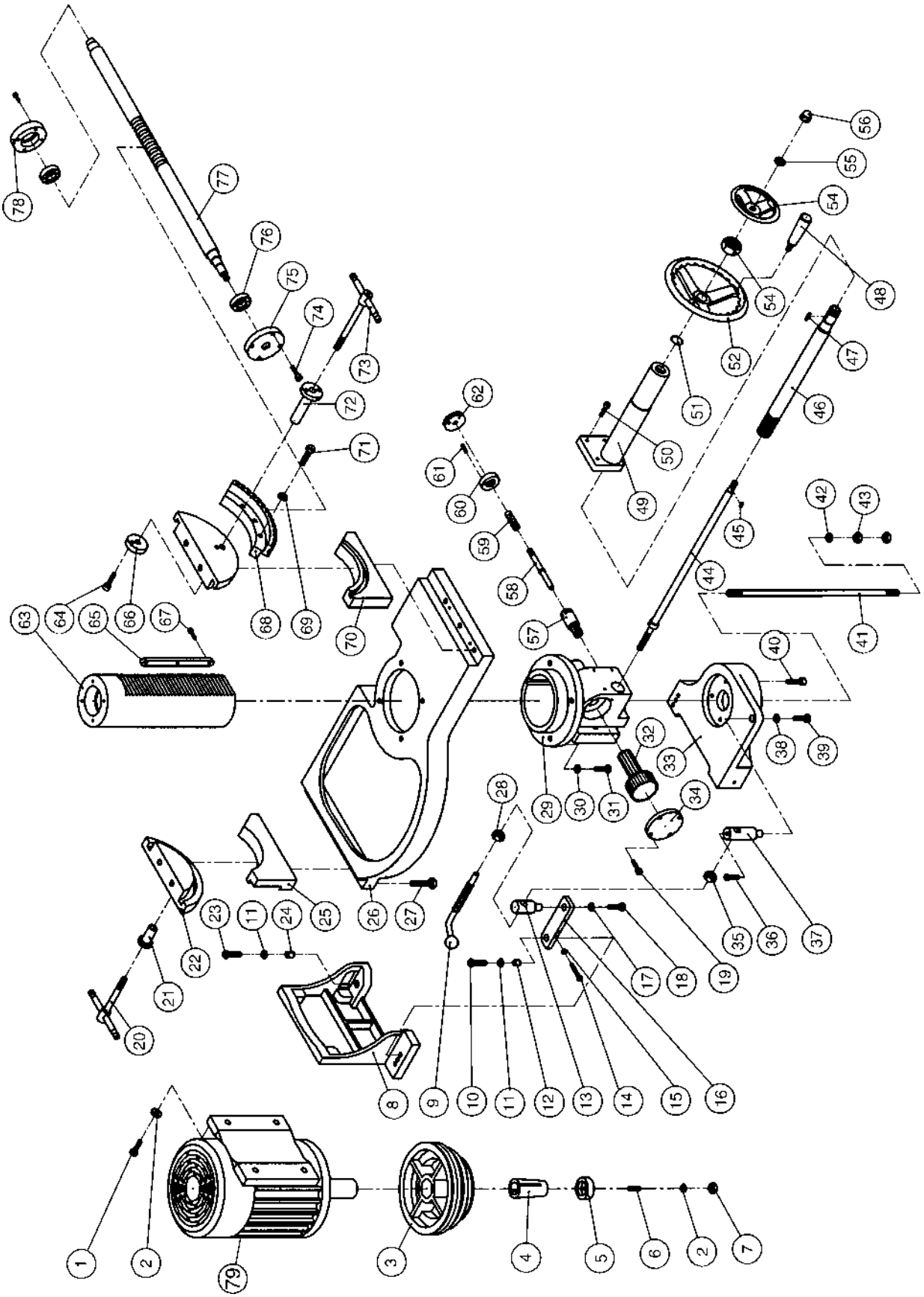
Shaper Body & Mitre Gauge Assemblies (29 Shaper)



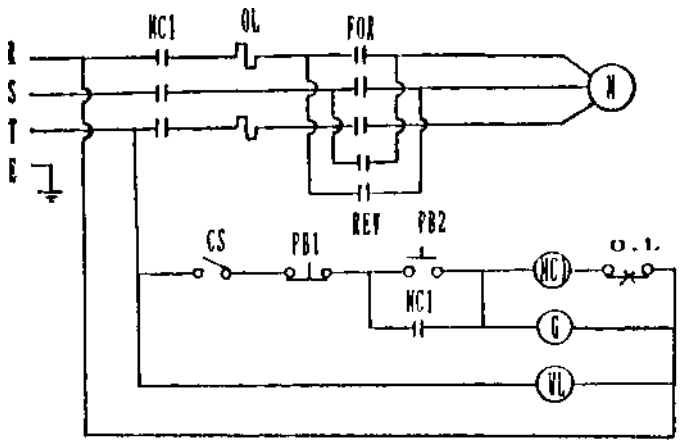
PARTS LIST: **Tilting Frame Assembly** (29 Shaper)

NO.	PART NO.	DESCRIPTION
1	6293124	SCREW, HEX SOC. HD. M10 X 35
2	6293115	WASHER, M10
3	6293125	PULLEY MOTOR
4	6293126	BUSHING
5	6293127	RETAINER
6	6293128	SCREW, HEX. SOC. SET, M10 X 35
7	6293129	NUT, HEX. M10
8	6293130	PLATE, MOTOR
9	6293131	HANDLE, ADJ. BELT
10	6293132	SCREW, HEX. SOC. HD M10 X 30
11	6293115	WASHER, M10
12	6293133	SPACER
13	6293134	STUD
14	6293135	SCREW, CHEESE HD. M8 X 16
15	6293017	NUT, HEX. M8
16	6293136	LINK
17	6293000	WASHER, M8
18	6293025	SCREW, HEX. SOC. HD. M8 X 30
19	6293062	SCREW, HEX. SOC. HD. M5 X 16
20	6293137	HANDLE, L.H.
21	6293138	BUSHING, L.H.
22	6293139	FRAME, INCLINING
23	6293140	SCREW, HEX SOC. HD. M10 X 50
24	6293141	SPACER
25	6293142	FRAME, INCLINING, L.H.
26	6293143	BOARD, SLOPE
27	6293144	SCREW, HEX. SOC. HD M10 X 25
28	6293145	NUT, HEX. M16
29	6293146	SUPPORT
30	6293115	WASHER, M10
31	6293147	SCREW, HEX SOC. HD. M10 X 45
32	6293148	GEAR
33	6293149	PLATE, MOTOR
34	6293150	COVER, WORM
35	6293151	NUT, HEX. M16
36	6293152	SCREW, HEX. SOC. HD M8 X 10
37	6293153	STUD
38	6293000	WASHER, M8
39	6293154	SCREW, HEX. SOC. HD M8 X 16
40	6293155	SCREW, HEX. SOC. HD M8 X 20
41	6293156	BOLT, DRAW
42	6293157	WASHER
43	6293158	NUT, HEX. M12
44	6293159	BOLT, WORM
45	6293160	KEY, 4 X 24
46	6293161	SHAFT, WORM
47	6293160	KEY, 4 X 24
48	6293162	HANDLE, PLASTIC
49	6293163	SOCKET, FIXED
50	6293164	SCREW, HEX. SOC. HD M6 X 30
51	6293165	RING, RETAINING
52	6293166	HANDWHEEL
53	6293167	NUT, HEX. M25
54	6293168	HANDWHEEL
55	6293169	WASHER, 1/2"
56	6293170	NUT, CAP 1/2"
57	6293171	BUSHING
58	6293172	SHAFT
59	6293173	SPRING
60	6293174	NUT
61	6293175	SCREW, HEX. SOC. SET M6 X 25
62	6293176	KNOB
63	6293177	SLEEVE
64	6293178	SCREW, HEX. SOC. HD M6 X 16
65	6293179	KEY
66	6293180	NUT, FIXED
67	6293181	SCREW, HEX. SOC. HD M4 X 16
68	6293182	GEAR
69	6293000	WASHER, M8
70	6293183	FRAME, INCLINING R.H.
71	6293184	SCREW, HEX. SOC. HD M8 X 40
72	6293185	BUSHING, R.H.
73	6293186	HANDLE, R.H.
74	6293187	SCREW, HEX. SOC. HD M5 X 22
75	6293188	COVER
76	6293189	BEARING
77	6293190	SHAFT, WORM
78	6293191	COVER
79	6292983	MOTOR, 5 HP 3 Ph
	6292982	BOX, CONTROL
	6292978	WRENCH, SPANNER
	6292979	WRENCH, 41mm, 1-1/4" SPINDLE
	6292980	WRENCH, 38mm, 1" SPINDLE
	6292981	WRENCH, 32mm, 3/4" SPINDLE
	6292975	BOX, TOOL (6 pc. set open-end wrenches, grease gun, hex key wrench set)

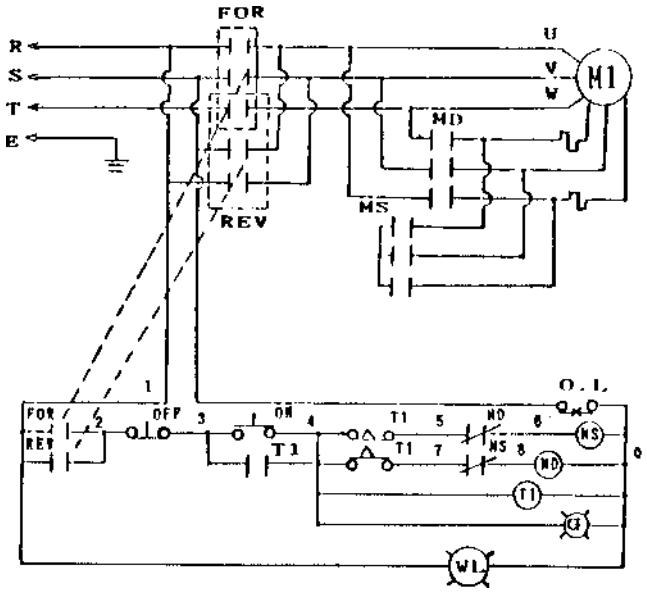
Tilting Frame Assembly (29 Shaper)



ELECTRICAL SCHEMATIC: **Model 29 Tilting Shaper**



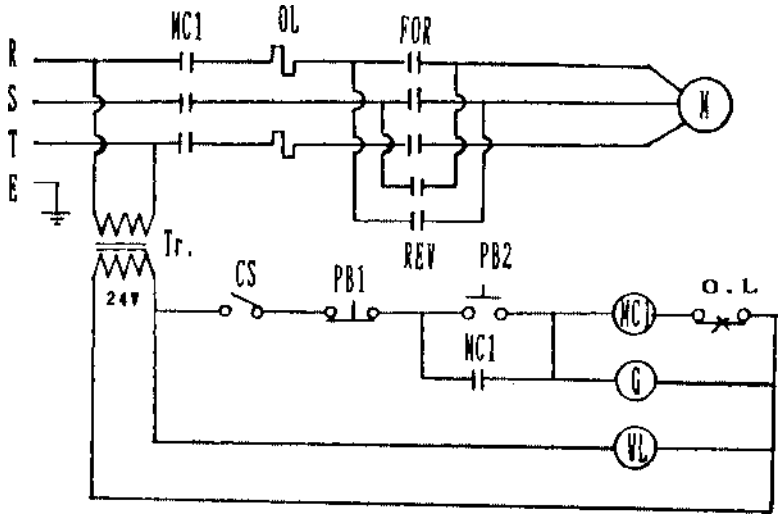
THREE PHASE



Y- △ START
(2-STEP SWITCH)

PART NO.	DESCRIPTION	TYPE	SPECIFICATION
6293074	FOR-REV SWITCH	CS	25A 1a
6293072	STOP	PB1	10A 250VAC 1b
6293071	START	PB2	10A 250VAC 1a
6292977	MAGNETIC CONTACTOR	MC1	MA15
6292976	THERMAL RELAY	O.L.	RH-15
6293073	PILOT LAMP	WL	

ELECTRICAL SCHEMATIC: **Model 29 Tilting Shaper**



THREE PHASE
24V

PART NO.	DESCRIPTION	TYPE	SPECIFICATION
6293200	CONTROL CIRCUIT TRANSFORMER	Tr.	PT54
6293074	FOR-REV SWITCH	CS	25A 1a
6293072	STOP	PB1	10A 250VAC 1b
6293071	START	PB2	10A 250VAC 1a
6292974	MAGNETIC CONTACTOR	MC1	MA15 24VAC
6292976	THERMAL RELAY	O.L.	RH-15
6292973	PILOT LAMP	WL	24VAC

OPTIONAL ACCESSORIES Model 29 Tilting Shaper

6293198	1" Spindle Assembly, 6" under the nut.
6293199	1-1/4" Spindle Assembly, 6" under the nut.
6293200	460V transformer.

To order parts or reach our service department, please call our toll-free number between 8:00 a.m. and 4:30 p.m. (CST), Monday through Friday. Having the Model Number and Serial Number of your machine available when you call will allow us to serve you quickly and accurately. Locating the stock number of the part(s) required from your parts manual will also expedite your order.

Phone No.: (800) 274-6848
Fax No. (800) 274-6840
If you are calling from Canada, please call 800-238-4746

E-mail: powermatic@powermatic.com
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